

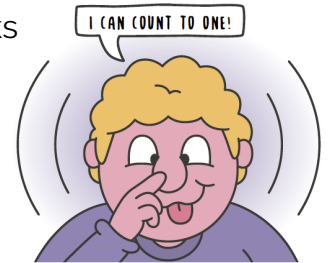
9780711249035
Paperback
128 pages

Educator's Guide: **A Quick History of Math: From Counting Cavemen to Computers**

With Curriculum Connections, Discussion Questions and Activities
By Clive Gifford, illustrated by Michael Young

Curriculum Connections, Grades 3-7
English Language Arts, Art, History, Math

Guide created by We Love Children's Books



Objective

Students will read the book independently; participate in a class discussion; and complete independent activities using the book as a springboard.

About the Book

In chronological order from pre-history to present day, this is the story of math itself. It's 43,000 years of human mathematical endeavor squeezed into **A Quick History of Math**, illustrated with funny cartoons and packed with fascinating facts.

About the Author

Clive Gifford has traveled to more than 70 countries, climbed rocket launch towers, ridden on robots, and flown gliders. He's had more than 200 books published and has received nominations for or won Royal Society, School Library Association, Smithsonian, and TES awards. He won the Blue Peter Book Award for Best Book with Facts 2019 for his title The Colors of History. Clive lives in Manchester, UK.

About the Illustrator

Michael Young is an illustrator and animator whose clients include Fruit of the Loom, Women's Health and Quarto Books.

Post-reading discussion questions

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1. Before you read this book, how did you feel about math? Did this book help make math seem more interesting? Why or why not? Did it surprise you to find so much humor in a book about math? Why do so many kids think math is boring, and that studying math is useless? Do you think this book could help change their minds?
2. Who was the earliest known female mathematician? When and where did she live? Why do you think that the book mentions so few women mathematicians? Do you think that there just weren't any women interested in math, or were women just not given the same educational advantages as men? What about in today's world—who is more interested in math: boys or girls?
3. What is the oldest surviving mathematical object in the world? How old is it? What is this method of recording numbers called? What are some other objects people used to keep count before numbers were used? Why was counting in fives and tens so popular?
4. The book makes it clear that math intersects with many other fields of study, like science and astronomy. Can you name some others? Why do you think that so many of the mathematicians were also inventors?
5. Which culture started writing things down? How long ago? What equipment did they use to do it? How did the Babylonians' Base 60 work in the same way that the modern Base 10 does?
6. Discuss some of the many cultures who feature in the history of math, and what some of their important contributions were. In your opinion, which culture did the most thinking about math? Which one made the most discoveries that helped increase understanding of mathematical concepts?
7. What is Pi? Can you remember the "short" value for Pi? Pi is an irrational number—what does that mean? Who discovered it? How do you use Pi to find the area of a circle?
8. Who was Pythagorus? What was the motto of the Pythagoreans? Do you believe, as they did, that numbers explain the world? Suggest some reasons that might be true. What is a theorem, and what is Pythagorus' Theorem?

9. One early math “career” was that of Egyptian scribe. What skills were required by scribes? What was the hieroglyph for one million? For infinity? For plus and minus signs? What are some other math careers discussed in the book? In today's world, what careers are good for people with math skills?
10. Which culture was one of the first to use fractions and what did they use them for? Which very old Chinese math textbook included working with fractions? Who published the very first book about math? In what year?
11. How did geometry help the ancient Egyptians build the pyramids? What Greek words does the term “geometry” come from? What's the difference between Plane and Solid Geometry? What are the “Fab Five” Special Solids? Why are these five called the Platonic Solids?
12. What is a Square Number? And what is a Square Root? What's the modern easy way to find a square root? How do you know when to expect the unofficial holiday “Square Root Day”? What are practical reasons for finding the area of a square?
13. What are statistics? How do businesses and governments use statistics? Can you think of some examples of fun statistics? To compile statistics, organizations need to collect lots of “big data” from people. What are some reasons that people might be unhappy that someone is collecting and using their data?
14. Who invented the equal sign and when? Who finally came up with the number zero? Can you imagine completing math assignments without either of these symbols?
15. What was the Calculus feud and who were the two math geniuses involved? Why do people think it's important to be “first” when making important math or scientific discoveries?
16. Who made the first working computer? In what year? How many parts did it contain? Who is considered the first computer programmer? What are some of the reasons that modern computers are smaller and faster than early versions?

English Language Arts

- Fractions, Geometry, Algebra and Calculus are four of the major types of math explored in the book. Write a short essay explaining each of them, when and how they were discovered, what they were used for in the past and how they are used today.
- Imagine that you have been asked to create the agenda for a math conference featuring six famous mathematicians from the past. Describe what the day will entail, including titles and descriptions for each one's lecture and a short biography of each lecturer.
- Research modern-day careers working with money, and write an essay explaining the pros and cons of each one.

Art

- Make a tally stick and use it to record the number of school subjects you are currently taking.
- Make a poster-sized Babylonian Number Chart or Sieve of Eratosthenes and post it in the classroom.
- Design a bumper sticker displaying the motto of the Pythagoreans: "All is Number."
- Use one or all of the Platonic Solids to create a drawing, painting or sculpture.
- Make a decorative chart listing the cultures visited in the book and depicting each one's important mathematicians.

Math

- Prove Pythagorus' Theorem using 5 triangles of different sizes.
- Take a statistical sample using all the kids in your class—it could be height, weight, or answers to a question. Plot the values on a graph.
- Research and write a report on the Fibonacci sequence.
- Complete the math puzzles given in the book—and after you're done, look at the answers to see how you did!
- As encouraged in the book, create a new magic square! Make a 3 X 3 grid and fill it out so that every row, column and diagonal add up to the same sum.
- Choose a month and depict the days of that month using the Mayan system of dots and dashes.
- Choose one of the three Funky theories, research it, and write a report.
- Put together several sets of interesting data and then make a Venn diagram illustrating them.

History

- Choose one of the mathematicians mentioned in the book, conduct further research, and write a report about them.
- Choose one of the cultures discussed in the book, conduct further research, and write a report on their math achievements.
- The book mentions that math can help create and crack secret codes. Put your spy research hat on and find out more! Write a report about how secret codes have been used throughout history, or for a specific historical event.

More in the Quick Histories series



A Quick History of the Universe (9780711262737)
A Quick History of Politics (9780711262744)
A Quick History of Money (9780711262751)

